

Minohellenus macrocheilus sp. nov. (Decapoda: Crustacea)
from the Oligocene Ashiya Group, Kyushu, Japan

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Abstract *Minohellenus macrocheilus* sp. nov. (Portunidae, Decapoda, Crustacea) is described from the Upper Oligocene Ashiya Group of Fukuoka Prefecture, Kyushu. The genus *Minohellenus* KARASAWA, 1990 is transferred from the subfamily Portuninae RAFINESQUE, 1815 to the Polybiinae ORTMANN, 1893.

Introduction

The Oligocene decapod fossils are not so common compared with those of the Neogene in Japan. The species hitherto described *Callianassa* sp. (Callianassidae) (NAGAO, 1941; KARASAWA, 1993), *Ctenocheles sujakui* IMAIZUMI, 1958 (Ctenochelidae), *Collinsius simplex* KARASAWA, 1993 (Goneplacidae), and *Imaizumila sexdentata* KARASAWA, 1993 (Portunidae) from the Lower Oligocene Kishima Group of northern Kyushu, *Calliax okamotoi* KARASAWA, 1993 (Callianassidae) from the Upper Oligocene Hioki Group of Yamaguchi Prefecture, and *Callianopsis elongatodigitata* (NAGAO, 1941) and *C. muratai* (NAGAO, 1932) (Ctenochelidae) from the Upper Eocene–Lower Oligocene of Hokkaido.

In this paper, we describe *Minohellenus macrocheilus* sp. nov., a fossil portunid crab deposited in the Kitakyushu Museum and Institute of Natural History (6, Nishihonmachi 3-chome, Yahatahigashiku, Kitakyushu, 805), from the Oligocene Ashiya Group of northern Kyushu. The *Minohellenus* KARASAWA, 1990 was established as a subgenus of the genus *Charybdis* de HAAN, 1833 in the subfamily Portuninae RAFINESQUE, 1815, to contain *C. (M.) quinquedentata* KARASAWA, 1990, but it is here treated as an independent genus, because it is distinguished from all the species assigned to *Charybdis* by having well separated two frontal and five anterolateral teeth which are considered to be taxonomic characters at the genus level.

Geology and Localities

The Ashiya Group distributed within Kitakyushu City, northern Kyushu, is divided into the Yamaga, Sakamizu and Waita Formations in ascending order (MATSUSHITA, 1949). Decapods were obtained from the Yamaga and Waita Formations. The Ashiya Group corresponds to Zones P21–“N4” of Blow’s scale of planktonic foraminifera (SAITO and OKADA, 1984; TSUCHI *et al.*, 1987) and Zones CP18–CP19b of calcareous nannoplankton (OKADA and BUKRY, 1980). The fission track age of the bottom of the Yamaga Formation is about 32 Ma (OZAKI and HAMASAKI, 1991). OKADA (1992) showed that the Yamaga and Sakamizu Formations were assigned to Zone CP19a (early Late Oligocene) of calcareous nannoplankton.

The material described herein was obtained from the following localities (Fig. 1).

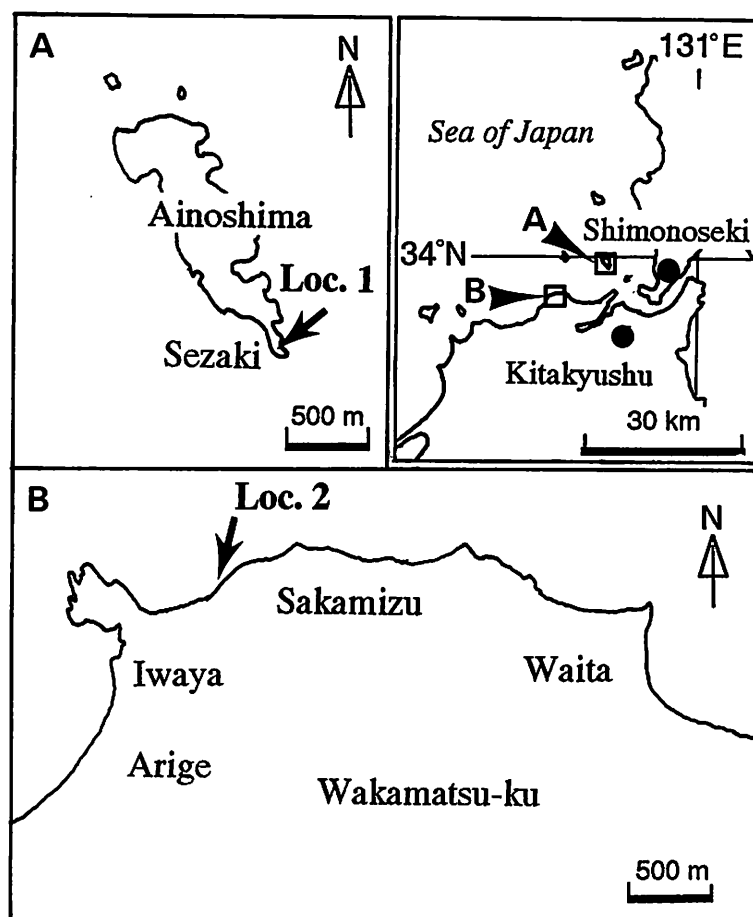


Fig. 1. Locality map.

Locality 1. Beach of Sezaki, Ainoshiba Island, Kokurakita-ku, Kitakyushu City, Fukuoka Prefecture. Fine-grained sandstone of the Yamaga Formation, Ashiya Group. The holotype specimen was collected by Mr. Y. OKAZAKI.

Locality 2. Beach of Arige, Wakamatsu-ku, Kitakyushu City, Fukuoka Prefecture. Fine-grained sandstone of the Waita Formation, Ashiya Group. The paratype specimen was collected by Mr. Y. OKAZAKI.

Systematic Description

Infraorder Brachyura LATREILLE, 1803

Section Heterotremata GUINOT, 1977

Superfamily Portunoidea RAFINESQUE, 1815

Family Portunidae RAFINESQUE, 1815

Subfamily Polybiinae ORTMANN, 1893

Genus *Minohellenus* KARASAWA, 1990 stat. nov.

Type species: By monotypy *Charybdis* (*Minohellenus*) *quinquedentata* KARASAWA, 1990; Early Miocene; Japan; gender, masculine.

Geologic range: Late Oligocene–Early Miocene.

Diagnosis: Moderate sized portunid; carapace transversely hexagonal. Front narrow, bearing two teeth; anterolateral margin bearing five teeth; chelipeds large, heterochelate, having smooth lateral surfaces.

Included species: *Minohellenus quinquedentatus* KARASAWA, 1990 (Mizunami Group, Early Miocene), *M. macrocheilus* sp. nov.

Discussion: This genus was originally described as a subgenus of the genus *Charybdis* de HAAN, 1833 from the Lower Miocene Mizunami Group by KARASAWA (1990). However, *Minohellenus* is here interpreted as an independent genus, because it differs from all the living and fossil species of *Charybdis* in having two well developed frontal and five anterolateral teeth.

Placement of this genus within the subfamily Polybiinae ORTMANN, 1893 is based upon the following characters (GLAESSNER, 1969; FELDMANN and MAXWELL, 1990): outline of the carapace is nearly equidimensional, strongly vaulted, dorsal surface of the carapace without distinctive transverse ridges, chelipeds are as long as pereopods, and the 4th pereopods have a peddled shaped dactylus.

The subfamily Polybiinae is represented by nine extant genera, *Benthochascon* ALCOCK and ANDERSON, 1899, *Bathynectes* STIMPSON, 1871, *Liocarcinus* STIMPSON, 1871, *Macropipus* PRESTANDREA, 1833, *Nectocarcinus* A. MILNE-EDWARDS, 1860, *Necora* HOLT-HUIS, 1987, *Ovalipes* RATHBUN, 1898, *Parathranites* MIERS, 1886 and *Polybius* LEACH, 1814. Among them, *Minohellenus* closely resembles *Liocarcinus*, but differs in having two frontal teeth, large, well separated anterolateral teeth, smooth lateral surfaces of the propodus of the chelipeds, and quadrate 4th thoracic sternites.

The subfamily Polybiinae contains four extinct genera, *Pororaria* GLAESSNER, 1980 (FELDMANN and MAXWELL, 1990) (Eocene, New Zealand), *Miopipus* MÜLLER, 1984 (Miocene, Hungary), *Itoigawaia* KARASAWA *et al.*, 1992 (Miocene, Japan) and *Imaizumila* KARASAWA, 1993 (Oligocene, Japan) besides *Minohellenus*. Of these, latter, *Minohellenus* is clearly related to *Itoigawaia*, but differs in having two broadly triangular frontal teeth and five large well separated anterolateral teeth. The general outline of the dorsal carapace of *Itoigawaia* is rather similar to *Parathranites* and *Imaizumila* than that of *Minohellenus*. *Minohellenus* has poorly differentiated dorsal regions of the carapace. The length of cheliped in *Minohellenus* is about 0.8 of the carapace width, whilst that in *Itoigawaia* is about one-third of the width.

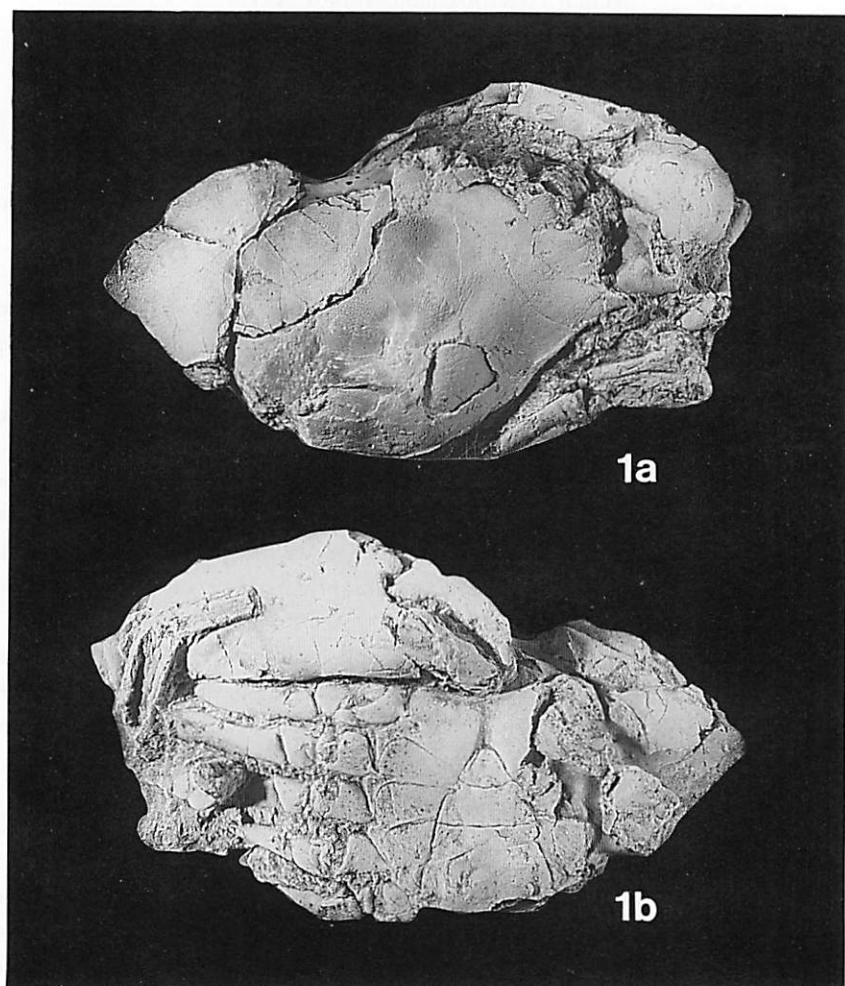


Fig. 2. *Minohellenus macrocheilus* sp. nov. 1a, b. Carapace, right cheliped and pereopods, KMNH IvP 300,021 (Paratype), $\times 1.0$. a, dorsal; b, ventral view.

***Minohellenus macrocheilus* sp. nov.**

Pl. 4, Figs. 1-4; Figs. 2-1a, b

Holotype: Carapace, right and left chelipeds, and right pereopods (KMNH IvP 300,020).

Paratype: Carapace, right cheliped and pereopods (KMNH IvP 300,021).

Type locality: Locality 1 (Yamaga Formation, Ashiya Group; early Late Oligocene).

Etymology: With reference to large chelipeds.

Diagnosis: *Minohellenus* with two broadly triangular frontal teeth, an acute 5th anterolateral tooth projecting laterally, and large, strongly heterochelate chelipeds.

Description: Moderately sized portunid, transversely hexagonal outline, length about 0.7 of width. Orbitofrontal margin about 0.4 of width across last anterolateral teeth. Front narrow, bearing two broadly triangular teeth, separated from small, broadly triangular supraorbital teeth by a V-shaped notch. Upper orbital margin concave, interrupted laterally by two deep fissures. Anterolateral margin gently convex, bearing five large, triangular well separated teeth; 1st (outer orbital) tooth small, directed forward; 2nd slightly smaller than 3rd; 3rd and 4th large, nearly equal in size; 5th pointed and directed laterally. Posterolateral margin concave, slightly longer than anterolateral margin. Dorsal surface gently convex, regions poorly defined; protogastric lobes large, more convex, shallowly separated from anterior mesogastric process and mesogastric lobe; cervical furrow broad, shallow; cardiac region depressed between tumid meso- and metabranchial lobes; epibranchial lobes weakly developed into ridges arching forwards to lead to 5th anterolateral tooth.

First-3rd thoracic sternites broad, rounded, with a shallow depression; 4th large, nearly quadrate in outline; 5th-8th subrectangular, longer than wide; 8th smallest. Third-4th somites of male abdomen large, with concave lateral margins, tapering anteriorly; 2nd wider than long, with rounded lateral margins, tapering anteriorly; 1st triangular, lateral margins rounded.

Chelipeds strongly heterochelate. Propodus of right major cheliped about 0.8 of carapace width. Dactylus and fixed finger about one-third propodus length; dactylus bearing a conical cusp proximally and four smaller ones medially on occudent margin; fixed finger bearing four or five conical cusps on occudent margin. Manus massive; lateral surface strongly convex; mesial surface moderately convex; dorsal surface bearing two strong keels armed with teeth which vary in size; the mesiodorsal keel stronger than the laterodorsal keel, bearing two or three forwardly directed teeth. Carpus with smooth dorsal surface and a well developed internal spine. Merus stout. Propodus of left, minor cheliped slender, 0.8 of right propodus length; fingers elongate, about half of propodus length; manus bearing two weakly developed keels on dorsal surface.

Pereiopods equal to or slightly longer than chelipeds. Dactylus and propodus of 4th pereiopod flattened and enlarged, forming a typical swimming peddale.

Discussion: The 5th anterolateral tooth projecting laterally, more separated and lobate anterolateral teeth, truncated supraorbital teeth, a relatively ovoid carapace, and a large major cheliped readily distinguish *Minohellenus macrocheilus* sp. nov. from the type species, *M. quinquedentatus* from the Lower Miocene Mizunami Group.

Besides the genera in the Polybiinae, *Rhachiosoma granuliferum* GLAESSNER, 1960 from the Eocene of New Zealand, which belongs to the subfamily Psammocarcininae BEURLIN, 1930, resembles the present new species in having laterally projected 5th anterolateral tooth, and shape of heterochelate chelae. However, *M. macrocheilus* sp. nov. differs from *R. granuliferum* in having well developed frontal teeth and less hypertrophied lateral spine which is situated slightly anterior or midlength of the carapace. In addition, the general outline of the carapace, the outline of the other anterolateral teeth, and thoracic and abdominal features of *R. granuliferum* indicate that the species is less related to *Minohellenus*.

Portunites triangulum RATHBUN, 1926 from the Oligocene of North America in the subfamily Carcininae MACLEAY, 1838 also resembles *M. macrocheilus* sp. nov., but differs in having well defined dorsal regions, strongly ridged branchial regions and 4th thoracic sternites which show irregular outline. The 4th peddale like pereiopod of *M. macrocheilus* sp. nov. indicate that the genus is quite a distance from *Portunites*.

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Plate 4

Explanation of Plate 4

Figs. 1-4. *Minohellenus macrocheilus* sp. nov. KMNH IvP 300,020 (Holotype), Locality 1.

Figs. 1a-c. right cheliped, $\times 1.2$. a, lateral; b, dorsal; c, mesial view.

Figs. 2a-c. left cheliped, $\times 1.2$. a, lateral; b, dorsal; c, mesial view.

Fig. 3. carapace, $\times 1.0$, ventral view.

Fig. 4. carapace and pereopods, $\times 1.0$, dorsal view.

